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10/510,946	10/27/2004	Wolfgang Lortz	259943US0X PCT	1487
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER FISHER, ABIGAIL L	
			ART UNIT 4173	PAPER NUMBER
			NOTIFICATION DATE 11/16/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/510,946

Applicant(s)

LORTZ ET AL.

Examiner

Abigail Fisher

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 9-11, 14 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5 Sheets.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

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DETAILED ACTION

Claims 1-15 are pending.

Election/Restrictions

Applicant's election without traverse of Group 1, titanium dioxide, and in formula I (M is Na, n is 3, and a is 1) in the reply filed on August 9 2007 is acknowledged.

Claims 1-15 are pending in the application, with claims 9-11 and 14-15 having been withdrawn as drawn to a non-elected invention. Accordingly, claims 1-8 and 12-13 are being examined on the merits herein.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8 and 12-13 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling when M is hydrogen other species when a covalent bond exists between the oxygen and the M species, does not reasonably provide enablement for when M is a species that results in a salt formation. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

To be enabling, the specification of the patent must teach those skilled in the art how to make and use the full scope of the claimed invention without undue

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experimentation. In re Wright, 999 F.2d 1557, 1561 (Fed. Cir. 1993). Explaining what is meant by "undue experimentation," the Federal Circuit has stated:

The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to enable the determination of how to practice a desired embodiment of the claimed invention. PPG v. Guardian, 75 F.3d 1558, 1564 (Fed. Cir. 1996).¹

The factors that may be considered in determining whether a disclosure would require undue experimentation are set forth by In re Wands, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing Ex parte Forman, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors:

- 1) the quantity of experimentation necessary,
- 2) the amount of direction or guidance provided,
- 3) the presence or absence of working examples,
- 4) the nature of the invention,
- 5) the state of the prior art,
- 6) the relative skill of those in the art,
- 7) the predictability of the art, and
- 8) the breadth of the claims.

These factors are always applied against the background understanding that scope of enablement varies inversely with the degree of unpredictability involved. In re Fisher, 57 CCPA 1099, 1108, 427 F.2d 833, 839, 166 USPQ 18, 24 (1970). Keeping that in mind, the Wands factors are relevant to the instant fact situation for the following reasons:

While all the Wands factors have been considered only those that relate to

unpatentability will be discussed.

Claim 1 as written indicates that there is a covalent bond between the oxygen and the M species. This is not true for those compounds that are salts, like the elected species. When M is sodium (Na) for example the interaction between the sodium and the oxygen is an ionic interaction not a covalent interaction. This would also be true for other salts as well.

1. The nature of the invention, state and predictability of the art, and relative skill level

The invention relates to a dispersing agent of formula I. The relative skill of those in the art is high, that of an MD or PHD. That factor is outweighed, however, by the unpredictable nature of the art. One skilled in the art of inorganic chemistry would not be able to form oxygen-sodium covalent bonds readily.

2. The breadth of the claims

While the specification does indicate alkali-metal phosphates and particular species like pentasodium triphosphate, which is the species that the examiner believes is the elected species, are useful. The claims as written do not indicate that this is the correct species and that the applicant does not intend the bond to be a covalent bond between the oxygen and the sodium.

3. The amount of direction or guidance provided and the presence or absence of working examples

¹ As pointed out by the court in In re Angstadt, 537 F.2d 498 at 504 (CCPA 1976), the key word is "undue", not "experimentation".

The specification provides no direction or guidance for how to make covalent bonds between sodium and oxygen.

4. The quantity of experimentation necessary

Because of the known unpredictability of the art, and in the absence of experimental evidence, no one skilled in the art would accept the assertion that the instantly claimed agents could be predictably made as inferred by the claim and contemplated by the specification. Accordingly, the instant claims do not comply with the enablement requirement of §112, since to practice the invention claimed in the patent a person of ordinary skill in the art would have to engage in undue experimentation, with no assurance of success.

Examiner Notes

For the purpose of the prior art rejection the examiner has interpreted the structure of formula I to be that of pentasodium triphosphate, wherein the bond between the sodium and the oxygen is that of an ionic bond.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-7, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Wagner et al. (US Patent No. 2951044).

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Wagner et al. discloses stable dispersion of metal oxide blends (title). Example 5 discloses an oxide blend of silicon dioxide and 12% titanium dioxide in water. Also included is sodium tripolyphosphate. The amount of sodium tripolyphosphate used in example 5 is 20g in 3.5 kg (3500 g) of water. This correlates to 0.5% sodium tripolyphosphate used which reads on claims 5 and 13. This aqueous blend is at a pH of 5.0. The specification discloses that the mixed oxides are obtained by thermal decomposition (column 2, lines 42-43). The silicone dioxide can also be viewed as other auxiliary substances and additives. The particle size is less than about 100 millimicrons (100 nm) and usually of less than 50 millimicrons (50 nm) (column 2, line 58).

Claims 1-2, 5-7, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kemp et al. (5453267, cited on PTO Form 1449).

Kemp et al. discloses sunscreen compositions. Example 33 contains 3.0 % w/w of sodium polyphosphate and 3.0 % titanium dioxide. The composition additionally contains other ingredients like butylene glycol. The phosphate salts are added in an appropriate amount to give a buffer pH between 4 and 8 (column 1, lines 65-67). The particle size of the titanium dioxide has is between 1 and 100 nm (column 2, lines 36-37).

The applicant has stated that the particle sizes of the oxide particles are not distributed symmetrically in the dispersion. Wagner et al. and Kemp et al. are silent as to the distribution of the oxide particles in the dispersion. Since the process of making

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via reaction in a flame is the same or the commercially used titanium dioxide is the same as applicants, the examiner believes that the particles sizes would inherently be the in the same if not similar distribution as that of the instant application.

It is noted that In re Best (195 USPQ 430) and In re Fitzgerald (205 USPQ 594) discuss the support of rejections wherein the prior art discloses subject matter which there is reason to believe inherently includes functions that are newly cited or is identical to a product instantly claimed. In such a situation the burden is shifted to the applicants to "prove that subject matter shown to be in the prior art does not possess characteristic relied on" (205 USPQ 594, second column, first full paragraph).

With regard to the functional limitation pertaining to the aqueous dispersion exhibiting a zeta potential of less than -20mV , Wagner et al. discloses the same claimed particles. Note MPEP 2112.02 (1I): "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705,709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Applicant Claims
2. Determining the scope and contents of the prior art.
3. Ascertaining the differences between the prior art and the claims at issue, and resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al.

Applicant Claims

The viscosity of the aqueous dispersion is less than 2000 mPas at a shear rate of 100 s⁻¹.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

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The teachings of Wagner et al. are set forth above. Specifically Wagner et al. discloses stable dispersion of metal oxide blends. The particle size is less than about 100 millimicrons (100 nm) and usually of less than 50 millimicrons (50 nm) (column 2, line 58). Example 5 discloses an oxide blend of silicon dioxide and 12% titanium dioxide in water. Also included is sodium tripolyphosphate. This aqueous blend is at a pH of 5.0. The specification discloses that the mixed oxides are obtained by thermal decomposition (column 2, lines 42-43). Example 4 wherein an oxide blend of TiO_2 is produced is 2.2 times that of water but that example contains sodium metaphosphate as the phosphate ion.

Ascertainment of the Difference Between Scope the Prior Art and the Claims
(MPEP §2141.012)

Wagner et al. does not specify the viscosity of the titanium dioxide and sodium tripolyphosphate dispersion.

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)

For the viscosity of the composition, it would appear that the viscosity meets the requirement of claim 8 of the instant application because the composition that contain a different phosphate has a viscosity of 2.2 times that of water. It is doubtful that changing from one phosphate to another but keeping the concentration the same as is the case for examples 4 and 5 of Wagner et al. would modify the viscosity drastically resulting in a viscosity that is not less than 2000 mPas.

Claims 3-4, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wagner et al. in view of Kemp et al. (cited on PTO Form 1449).

Applicant Claims

Applicant claims an aqueous dispersion containing pyrogenically produced titanium oxide have an average particle size less than 200 nm. The dispersions contains as a dispersing agent at lease one polyphosphate, specifically pentasodium triphosphate. The surface of the metal oxide particles is also modified by means of organic compounds. The percent of metal oxide particles contained in the aqueous dispersion is to 20 to 60 wt. %. The aqueous dispersion can also contain 30 to 50 wt. % of metal oxide particles.

Determination of the Scope and Content of the Prior Art (MPEP §2141.01)

The teachings of Wagner et al. and Kemp et al. are set forth above.

Specifically Wagner et al. discloses stable dispersion of metal oxide blends. The particle size is less than about 100 millimicrons (100 nm) and usually of less than 50 millimicrons (50 nm) (column 2, line 58). Example 5 discloses an oxide blend of silicon dioxide and 12% titanium dioxide in water. Also included is sodium tripolyphosphate. This aqueous blend is at a pH of 5.0. The specification discloses that the mixed oxides are obtained by thermal decomposition (column 2, lines 42-43).

Kemp et al. discloses sunscreen compositions. The titanium dioxide particles used include those commercially available from Dugssa under the trade name P25, and from Teikoku Kako Co., Ltd. under the trade designation MT150W (column 2, lines 45-47). These are the same titanium dioxide particles disclosed by applicant as being

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acceptable with P25 proving to be particularly advantageous (pages 7-8, lines 22-33 and 14 of the specification). Other titanium dioxides include MT100T, which is available Teikoku Kako Co., Ltd, and is coated with aluminum stearate. Example 33 includes sodium polyphosphate in 3%, titanium dioxide in 3%. Other additives are also included, like butylenes glycol.

Kemp et al. discloses when the composition is intended to be used as a day cream or moisturizer usually less titanium dioxide is present. However in the sunblock compositions that are intended to prevent a substantial amount of the sun's rays from reaching the skin, higher levels of titanium dioxide are required, levels up to as high as 30 % (column 2, lines 20-35). Also disclosed is that coated titanium dioxide discolors less rapidly than uncoated titanium dioxide. However the addition of phosphate anions significantly improves the storage properties of compositions containing either coated or uncoated titanium dioxide (column 2, lines 53-56).

Ascertainment of the Difference Between Scope the Prior Art and the Claims
(MPEP §2141.012)

Wagner et al. does not specify using surface modified metal oxide particles.

Wagner et al. does not specify using higher percentages of titanium dioxide in the compositions.

Finding of Prima Facie Obviousness Rational and Motivation
(MPEP §2142-2143)

It would have been obvious to one of ordinary skill in the art to modify the invention of Wagner et al. and include surface modified metal oxide particles. One

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would have been motivated to do this because it was known at the time of the invention that in general coated titanium dioxide discolors less rapidly than uncoated. This is an advantageous feature in cosmetic compositions as discolorization is an undesirable property for most consumers resulting in the practice of the instant application with a reasonable expectation of success.

It would have been obvious to one of ordinary skill in the art to optimize the amount of titanium dioxide in the composition. One would have been motivated to do this because desired on the formulation, for example if a higher amount of sun blockage is required then more titanium dioxide is necessary resulting in the practice of the instant application with a reasonable expectation of success.

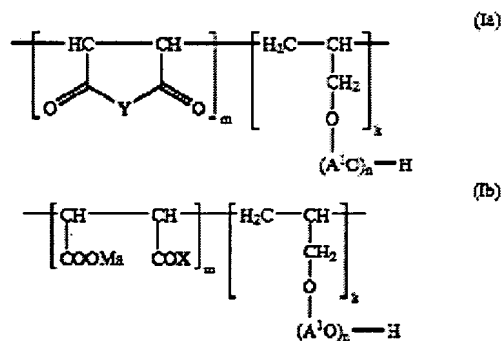
Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-2, 4-8 and 12-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 10/456276 in view of Kemp et al. Copending application '276 claims an aqueous dispersion comprising metal oxide particles and at least one compound of formula I.



The aqueous dispersion comprises 20 to 60% microfine metal oxide particles. The metal oxide particles as claimed include titanium dioxide. The particle size of the particle size is between 10 and 100 nm. The viscosity is between 10 and 40000 mPas. The aqueous dispersion further comprises cosmetic auxiliaries and additives. The copending application '276 does not claim including poly(phosphate) in the dispersion.

The teachings of Kemp et al. are set forth above.

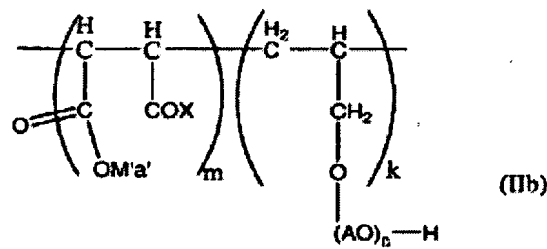
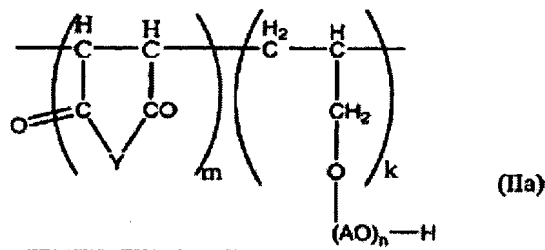
It would have been obvious to one of ordinary skill in the art to include poly (phosphate) as Kemp et al. discloses that the addition of phosphate anions significantly improves the storage properties of compositions containing either coated or uncoated titanium dioxide.

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It would have been obvious to one of ordinary skill in the art to optimize the pH of the formulation. One of ordinary skill would have been motivated to do this because copending '276 is a cosmetic formulation and therefore will be applied to the skin. A pH too high or too low is known to cause skin irritation. Therefore, it would have been obvious to one of ordinary skill in the art to manipulate the pH to a physiologically compatible pH. Thereby resulting in the instant application with a reasonable expectation of success.

This is a provisional obviousness-type double patenting rejection.

Claims 1-8 and 12-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-11 of copending Application No. 10456277 in view of Kemp et al. Copending application '277 claims an aqueous dispersion comprising hydrophobically coated microfine metal oxide particles and at least one of the compounds of general formula I.



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The aqueous dispersion comprises 20 to 60% of metal oxide particles. The particle size is between 10 and 100 nm. The viscosity is between 10 and 40000 mPas. The dispersion further comprises cosmetic auxiliaries and additives. A specific species of coated metal oxide is claimed, trialkoxyoctylsilane. This species anticipates the genus of surface modified metal oxide particles. The copending application '277 does not claim including poly(phosphate) in the dispersion.

The teachings of Kemp et al. are set forth above.

It would have been obvious to one of ordinary skill in the art to include poly (phosphate) as Kemp et al. discloses that the addition of phosphate anions significantly improves the storage properties of compositions containing either coated or uncoated titanium dioxide.

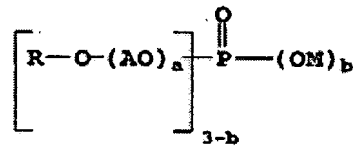
It would have been obvious to one of ordinary skill in the art to optimize the pH of the formulation. One of ordinary skill would have been motivated to do this because copending '277 is a cosmetic formulation and therefore will be applied to the skin. A pH too high or too low is known to cause skin irritation. Therefore, it would have been obvious to one of ordinary skill in the art to manipulate the pH to a physiologically compatible pH. Thereby resulting in the instant application with a reasonable expectation of success.

This is a provisional obviousness-type double patenting rejection.

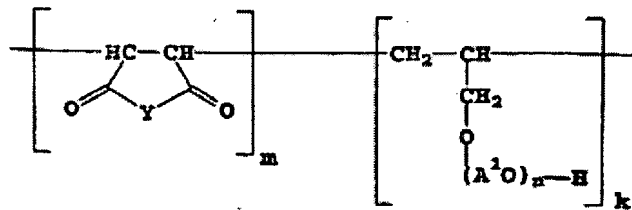
Claims 1-8 and 12-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/512684 in view of Kemp et al. Copending application

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'684 claims an aqueous dispersion comprising pyrogenically prepared oxide particles of metals. The dispersion particles are less than 250 nm. The dispersion contains at least one dispersant of formula I and/or at least one copolymer of general formula IIa.



I



IIa

The metal oxide particles include titanium oxide. The metal oxide particles in the dispersion are from 20 to 60%. The pH of the dispersion is in the range of 4.5 to 7.5. The zeta potential of the dispersions is less than -20 mV. The copending application '684 does not claim including poly(phosphate) in the dispersion.

The teachings of Kemp et al. are set forth above.

It would have been obvious to one of ordinary skill in the art to include poly (phosphate) as Kemp et al. discloses that the addition of phosphate anions significantly improves the storage properties of compositions containing either coated or uncoated titanium dioxide.

This is a provisional obviousness-type double patenting rejection.

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Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abigail Fisher whose telephone number is 571-270-3502. The examiner can normally be reached on M-Th 9am-4pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on 571-272-0718 or Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Abigail Fisher
Examiner
Art Unit 4173

AF


SHARMILA GOLLAMUDI LANDAU
PRIMARY EXAMINER